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EXAMINER	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/835,040
Filing Date: April 13, 2001
Appellant(s): ROBERTS, JERRY B.

Joshua N. Randall
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 3/4/2008 appealing from the Office action mailed 7/20/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,854,625	FRISCH et al.	11-1996
5,872,561	FIGIE et al.	3-1997

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 111-164 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frisch et al. (US 5,854,625) in view of Figie et al. (US 5,872,561).

Regarding claim 111, Frisch et al. disclose in figure 2A-3B, a force sensor for sensing a touch force applied to touch surface (18), the force sensor comprising: a first element including a first capacitor plate (see touch surface 18 comprising a first capacitor 24a) having first capacitive surface; and second element including a second capacitor plate (24b) opposed to the first capacitor plate; wherein transmission of at least part of the touch force through the elastic element contributes to a change capacitance between the first capacitor plate and the second capacitor plate (see column 5, lines 62-67). However, Frisch et al. does not disclose the first element (including capacitor 24a) has at least a portion is an elastic element. Figie et

al. disclose in fig 1, a switch matrix (10) having a first element is an elastic member (see membrane 12, constructed of a flexible, see col. 3, lines 66-68).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the using of membrane constructed of flexible as taught by Figie et al. into the system of Frisch et al. for producing the claimed invention because this would provide a finger or stylus presses down upon forward membrane, it deforms that membrane to cause contact (14) to touch corresponding contact (18) to allow a current flow therebetween (see col. 3, lines 62-67).

Regarding claims 112, 141, Frisch et al. disclose further the first element (2) is substantially planar (see figure 2A).

Regarding claim 113, Frisch et al. do not disclose the first capacitor plate and the elastic element are integral. Figie et al. disclose in fig 1,a switch matrix (10) having a first element capacitor (12) also is an elastic member and thus the first capacitor plate and the elastic element are integral (see membrane 12, constructed of a flexible, see col. 3, lines 66-68) and discussed above.

Regarding claims 114-119, 142, Frisch et al. disclose the first capacitor plate and the elastic element are composed have the same substrate (see figure 2A), and the force sensor, further comprising force-receiving means (regions 32) for receiving at least part of the touch force into the first element (see column 6, lines 65-67). However, Frisch et al. do not disclose the elastic element comprises an elevated feature of the first capacitor plate, and located at the elastic center of the first element. Figie discloses the elastic element comprises an

elevated feature of the first capacitor plate, and located at the elastic center of the first element as discussed above.

Regarding claims 120-121, 145-146, Frisch et al. disclose the force sensor further, the touch surface (18) is in communication with a region surface of the force-receiving means (32), and wherein the touch surface tends to remain in contact with the region the surface of the force-receiving means when the position of the touch surface changes with respect the force-receiving means (see col.6, lines 65-67), further comprising force transmission means (32) for transmitting at least part of the touch force to at least one structure other than the first element.

Regarding claims 122-125, 158, Frisch et al. disclose further the force sensor, wherein the second element (14) comprises planar support surface that includes a plurality electrically conductive mechanical bearing contacts (see col. 5, lines 62-64); and wherein at least portions of the first capacitor plate are in contact with the plurality of mechanical bearing contacts to transmit force thereto (see col. 5, lines 62-67), wherein the second capacitor plate (24b) includes a second capacitive surface that is coplanar with the plurality of mechanical bearing contacts and are composed of the same substrate (see col.6, lines 36-38). The force sensor of claim wherein the planar support surface is part of an interconnect system to transmit a signal developed response to the change capacitance between the first capacitor plate and the second capacitor plate (see col. 5, lines 39-46), and wherein the second capacitive surface and the at least one support surface are integral (see figure 2A).

Regarding claims 127-129, 152-154, Frisch et al. disclose that the force sensor, further comprising force signal development means for developing a signal in response to the change

in capacitance between the first capacitor plate and the second capacitor plate, and wherein the force sensor includes an inherent axis of sensitivity that passes through the elastic, and wherein the touch surface is a touch surface of a handheld device (see column 3, lines 33-37).

Regarding claims 126, 130-139, 151, 155-157 and 159-164 Frisch et al. and Figie et al. disclose every feature of the claimed invention as discussed above, excluding wherein the first and second capacitor plates are separated by a volume, and wherein the ratio of the height of the volume to the volume's greatest breadth is less than .05; or the length of the mechanical path defining the capacitive gap being no greater than one-fifth of the maximum distance between any two force sensors that are used in the touch location device, or wherein the first capacitive surface, the elastic element and, and the second capacitor plate has a greatest dimension that is at least five times its least dimension; or the length of the mechanical path defining the capacitive gap being no greater than four times the maximum dimension of the volume of the capacitor gap; or the unloaded state of the force sensor not more than 10 mils, or the unloaded state of the force sensor is not less than thirty times the average height of the capacitive gap in the unloaded state of the force sensor; or the wherein the force sensor has a normal stiffness not less than 0.5 pounds per mil.

It would have been obvious for Frisch et al. and Figie et al.'s system to have wherein the first and second capacitor plates are separated by a volume, and wherein the ratio of the height of the volume to the volume's greatest breadth is less than .05; or the length of the mechanical path defining the capacitive gap being no greater than one-fifth of the maximum distance between any two force sensors that are used in the touch location device, or wherein the first capacitive surface, the elastic element and, and the second capacitor plate has a

greatest dimension that is at least five times its least dimension; or the length of the mechanical path defining the capacitive gap being no greater than four times the maximum dimension of the volume of the capacitor gap; or the unloaded state of the force sensor not more than 10 mils, or the unloaded state of the force sensor is not less than thirty times the average height of the capacitive gap in the unloaded state of the force sensor; or the wherein the force sensor has a normal stiffness not less than 0.5 pounds per mil as claimed since such a modification would have involved a mere change in size/range of he system. A change in size/range is generally recognized as being within the level of ordinary skill in the art.

See In Rose, 105 USPQ 237 (CCPA 1995) and

See In re Reven, 156 USPQ 679 (CCPA 1968).

Regarding to claim 140, Frisch et al. disclose in figure 2A-3B, a force sensor for sensing a touch force applied to touch surface (18), the force sensor comprising: a first element including a first capacitor plate (see touch surface 18 comprising a first capacitor 24a); and second element including a second capacitor plate (24b) opposed to the first capacitor plate; wherein transmission of at least part of the touch force through the elastic element contributes to a change capacitance between the first capacitor plate and the second capacitor plate (see column 5, lines 62-67). However, Frisch et al. do not disclose the first element (including capacitor 24a) has at least a portion is an elastic element, the elastic element portion defining an integral elevated feature of the first capacitor plate. Figie et al. disclose in fig 1, a switch matrix (10) having a first element is an elastic member (12), and elastic element portion defining an integral elevated feature of the first capacitor plate (because membrance 12, it deforms that membrance to cause contact 14 to touch corresponding

contact 18 allowing current, clearly, membrance is a capacitor to conduct of current and also is an integral elevated feature of the capacitor, see membrane 12, constructed of a flexible, see col. 3, lines 66-68).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the using of membrane constructed of flexible to cause contact 14 to touch corresponding contact 18 allowing current as taught by Figie et al. into the system of Frisch et al. for producing the claimed invention because this would provide a finger or stylus presses down upon forward membrane, it deforms that membrane to cause contact (14) to touch corresponding contact (18) to allow a current flow therebetween (see col. 3, lines 62-67).

(10) Response to Argument

Applicant states that "The membrane 12 disclosed by Figie is not an elastic element portion of a capacitor plate as the rejection contends. The membrane 12 is a flexible, insulating substrate that supports an electrical contact 14 of a switch element 26. By definition an insulating material does not have capacitive properties and therefore cannot be a portion of a capacitive plate. Furthermore, the membrane 12 is a separate and distinct structure from the contacts 14. There is no disclosure or suggestion in Figie that the membrane 12 is "a portion" of the contacts 14. Even if it were possible to have an insulative portion of a capacitive plate, which Appellant does not concede is possible, there is no teaching or motivation provided by Figie to create such a structure. Therefore, Figie fails to remedy the deficiencies of Frisch, because the combination of Frisch and Figie fails to disclose or suggest "a first capacitor plate at least a portion of which is an elastic element that

allows the first capacitor plate to move" (claim 111) or "a first capacitor plate having an elastic element portion" (claim 140). Furthermore, one of ordinary skill in the art would find no motivation in Figie to modify the plates 24a, 24b of Frisch to include "an elastic element" or "an elastic element portion" that is part of the plate 24a, 24b, because Figie only teaches a membrane 12 that has insulative rather than conductive properties and that is a separate and distinct feature from the electrical contact (i.e., conductive member). Thus, neither Frisch nor Figie, alone or in combination, discloses or renders obvious every limitation of claims 111 and 140 and the claims that depend from them".

Examiner respectively disagrees because Frisch et al. discloses in figure 2A-3B, a force sensor for sensing a touch force applied to touch surface (18), the force sensor comprising: a first element including a first capacitor plate (see touch surface 18 comprising a first capacitor 24a) having first capacitive surface; and second element including a second capacitor plate (24b) opposed to the first capacitor plate; wherein transmission of at least part of the touch force through the elastic element contributes to a change capacitance between the first capacitor plate and the second capacitor plate (see column 5, lines 62-67). However, Frisch et al. does not disclose the first element (including capacitor 24a) has at least a portion is an elastic element. Figie et al. discloses in fig 1, a switch matrix (10) having a first element is an elastic member (see membrane 12, constructed of a flexible, see col. 3, lines 66-68).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the using of membrane constructed of flexible as taught by Figie et al. into the system of Frisch et al. for producing the claimed invention because this would provide a finger or stylus presses down upon forward membrane, it deforms that membrane

to cause contact (14) to touch corresponding contact (18) to allow a current flow therebetween (see col. 3, lines 62-67).

Applicant also states that " Frisch and Figie fail to disclose or suggest a first substantially planar element of a force sensor wherein "the elastic element portion defining an integral elevated feature of the first capacitor plate, the elastic element portion receiving at least part of the touch force into the first capacitor plate," as required by claim 140. The features in Frisch and Figie identified by the Examiner as being elastic features (i.e., the insulative membrane 12 in Figie) are not an integral part of a capacitive plate and are not an elevated feature of a capacitor plate. As discussed above, the membrane 12 is not integral with the electrical contacts 14, but is rather a separate and distinct piece. The contact 14 disclosed by Figie have no elevated features, much less an elastic element portion defining an integral elevated feature of a capacitor plate."

Examiner respectively disagrees because Frisch et al. disclose in figure 2A-3B, a force sensor for sensing a touch force applied to touch surface (18), the force sensor comprising: a first element including a first capacitor plate (see touch surface 18 comprising a first capacitor 24a); and second element including a second capacitor plate (24b) opposed to the first capacitor plate; wherein transmission of at least part of the touch force through the elastic element contributes to a change capacitance between the first capacitor plate and the second capacitor plate (see column 5, lines 62-67). However, Frisch et al. does not disclose the first element (including capacitor 24a) has at least a portion is an elastic element, the elastic element portion defining an integral elevated feature of the first capacitor plate. Figie et al. disclose in fig 1, a switch matrix (10) having a first element is an elastic member (12),

and elastic element portion defining an integral elevated feature of the first capacitor plate (because membrance 12, it deforms that membrance to cause contact 14 to touch corresponding contact 18 allowing current, clearly, membrane is a capacitor to conduct of current and also is an integral elevated feature of the capacitor, see membrane 12, constructed of a flexible, see col. 3, lines 66-68). Therefore, the combinations of Frisch et al. and Figie are satisfied for their intended purpose.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Kimnhung   Nguyen/

Examiner, Art Unit 2629

Conferees:

Michael Razavi

Bipin Shalwala

Response To Arguments

4. Applicant's arguments, filed on 4/19/07, with respect to 111-164 have been fully considered but they are not persuasive.

Applicant states that " Frisch discloses a touch surface 18 and a sensor type device (capacitor 24) that senses a touch force applied to the touch surface 18. However, Frisch fails to disclose or suggest "a first capacitor plate at least a portion of which is an elastic element that allows the first capacitor plate to move" (claim 111) or "a first capacitor plate having an elastic element portion" (claim 140), The capacitive plates 24a, 24b disclosed by Frisch do not include an elastic element. The spring members 20 disclosed by Frisch are separate and distinct from the capacitive plates 24a, 24b. Therefore, Frisch fails to disclose or suggest every limitation of at least claims 111 and 164".

"Figie fails to remedy the deficiencies of Frisch as it relates to claims 111 and 140. Figie discloses a switch matrix 10 that includes an outer membrane 12 and a rearward membrane 16.

Each membrane is constructed of a flexible, electrically insulating, transparent material. The insulating properties prohibit the membranes 12, 16 from functioning as a capacitive member. A plurality of contacts 14 are positioned on a rear surface of the membrane 12, and a plurality of contacts 18 are positioned on a front surface of the membrane 16 directly across from individual contacts 14. The membranes 12, 16 are arranged such that when a finger or stylus presses down upon the membrane 12, the membrane l 2 is deformed to cause contact 14 to touch corresponding contact 18. When the contacts 14, 18 engage, a current flows therebetween to provide a switch function. The membranes 12,16 remain separated by insulating spacers until the membrane I2 is engaged by a stylus/finger. The contacts 14, 18 do not function as a capacitive structure, wherein a change in capacitance of the capacitive structure is monitored as part of a sensor device. The contacts 14, 18 are components of a switch element 26 that operates only upon engagement of the contacts 14, 18 to generate current flow".

"The membrane 12 disclosed by Figie is not an elastic element portion of a capacitor plate as the rejection contends. The membrane 12 is a flexible, insulating substrate that supports an electrical contact 14 of a switch element 26. An insulating material is not capacitive.

Examiner respectively disagrees because Frisch et al. discloses in figure 2A-3B, a force sensor for sensing a touch force applied to touch surface (18), the force sensor comprising: a first element including a first capacitor plate (see touch surface 18 comprising a first capacitor 24a) having first capacitive surface; and second element (including a second capacitor plate (24b) opposed to the first capacitor plate; wherein transmission of at least part of the touch force through the elastic element contributes to a change capacitance between the first capacitor plate and the second capacitor plate (see column 5, lines 62-67). But,

Frisch et al. does not disclose the first element has at least a portion is an elastic element. Figie discloses in fig. 1, a display system (switch matrix (10) a display 20) having a first element (12) is an elastic member (see membrane 12, constructed of a flexible, see col. 3, lines 66-68) and a second element (16). The membrane 12 is an elastic element portion of a capacitor plate because it is a flexible and supports an electric contact 14. Therefore, the combination of Frisch et al. and Figie are satisfied for its intended purpose. For these reasons, the rejections are maintained.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimnhung Nguyen whose telephone number is (571) 272-7698. The examiner can normally be reached on MON-FRI, FROM 8:30 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on571-272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kimnhung Nguyen

Patent Examiner

July 9, 2007

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